

# CHESTNUT STREET IMPROVEMENTS

## DESIGN AND PLANNING SERVICES

OPERATING PROPOSAL

TOWN OF ARLINGTON // DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

DECEMBER 23, 2021



Stantec Consulting Services Inc.  
226 Causeway Street, 6th Floor, Boston MA 02114

December 23, 2021

**Attention: Daniel Amstutz, AICP, Senior Transportation Planner**

Department of Planning & Community Development

Town of Arlington

730 Massachusetts Avenue

Arlington, MA 02476

**Subject: Design & Planning Services for Chestnut Street Improvements**

Dear Dan,

Stantec Consulting Services Inc. is pleased to submit this Letter Proposal outlining our Scope of Services and attached Fee Estimate for preparation of a survey, construction documents, traffic analysis, conceptual design and public engagement in support of planned improvements to Chestnut Street and its intersections with Mystic and Medford Streets. This busy stretch of roadway has seen a tragic pedestrian fatality and numerous safety concerns in recent years, and we are committed to helping improve operations for all modes, working towards a goal of "vision zero."

The Town has conducted an extensive outreach process through surveys and multiple community meetings with the Transportation Advisory Committee, arriving at a consensus design for the heart of Chestnut Street and two critical mid-block crossings. Our team is well-versed in the features of the design, having very recently developed similar designs (now installed) for multiple Massachusetts communities implementing Shared Streets and Spaces grants from MassDOT—often working through the State's access permit process—that include curb extensions, bike lanes, Rapid Rectangular Flashing Beacons, and crossing islands. We are ready to hit the ground running, complete a survey, and develop a final design that can be implemented within the Town's anticipated budget.

In addition, more extensive analysis, outreach and design effort will be required to find the best design for the intersections with Mystic and Medford Streets, where conflicting volumes, trucks, sightlines and speeds converge to create perennial safety concerns. Stantec is at the forefront of mobility planning and design in constrained urban environments like those on this corridor, having recently completed complicated intersection design processes in multiple locations around the country, including nearby in Kenmore Square where a significant improvement is planned for this complex location. You will find that our people-first, data-rich, safe streets approach is ideal for the challenges of Chestnut Street. We look forward to working with you.

Below, please find a summary of our approach and our recommended scope of services.

Reference: Design & Planning Services for Chestnut Street Improvements

## Approach

Stantec's Boston-area streets design team incorporates a wealth of experience, inter-disciplinary depth and technical knowledge in each of its urban street design efforts. Our user-based approach recognizes that urban streets are not about cars but rather about moving people, while serving as the front-doors to our communities. This means understanding travel along and across the street by all modes as well as how land uses interact with the street. We employ unique solutions to understand activity—including using Location Based Service (LBS) "big" data tools like Steetlight or Replica, our own Customer Sentiment social media complaint & comment scrubber, or even time-lapse video recordings—and create visually-compelling summaries to guide our solution development and support interactions with key stakeholders and the public. As our front-doors, streets make abutters their most passionate users, but so many more people of all ages and abilities must use these same streets with often varying desires and needs. From package deliveries and recreational walks, to emergency services and daily commutes, to a family bike ride and a visit to a local business, streets like Chestnut serve so many functions. Our goal with data and outreach is to daylight as many of these uses as possible to help the community recognize the complexity of their street and recognize that balance is needed to achieve a consensus design. We recognize that consensus may not fully satisfy every single request, but the best solutions address key aspects of every critical need.

The most successful designs come by working with the community to understand the data, balance competing needs, and learn about the trade-offs needed in design guidance to achieve the best outcomes. We work hands on with Town staff and the public through online (and in-person where possible) interactive workshops to develop idea sets, test solutions and create final concepts. Drawing from the latest design guidance from sources like NACTO, we make participants understand the inherent trade-offs of their ideas, often providing the data to weigh and score differing approaches against community objectives, including safety, comfort, environmental impact and person-access, across all modes of travel and all trip purposes. Working in an iterative fashion with the community and officials, our team has been able to overcome significant disparities of opinion to achieve consensus designs that work to the benefit of all travelers with greater safety.

## Team

Stantec is submitting an accompanying proposal for the Mass Ave/Appleton Street Safety and Accessibility Corridor Project. To facilitate a coordinated effort and maintain continuity with the Town, we propose to staff both projects with the same team, including Jason Schrieber as PIC, Aleece D'Onofrio as Project Manager, Ralph DeNisco as Planning Lead, and Walt Woo as Design Lead. A slightly smaller design team will be engaged for this effort, as outlined below.

Reference: Design & Planning Services for Chestnut Street Improvements

<u>Staff</u>	<u>Role</u>	<u>Responsibilities</u>
Aleece D'Onofrio, PE	Project Manager	Core team & main point of contact, managing team coordination & both mid-block and intersection design tasks
Ralph DeNisco	Planning Lead	Core team, leading intersection planning
Walt Woo, PE, PTOE	Design Lead	Core team, leading design team for mid-block design development and intersection conceptual design
Jason Schrieber, AICP	Principal-in-Charge	Overall project guidance & accountability
Evan Drew, PE, PTOE	Mobility Design	Mid-block design & intersection design & analysis
Sarah Borenstein, EIT	Mobility Design	Mid-block design & intersection design & analysis
Marlin Hueil, EIT	Mobility Design	Mid-block design development
Erin Cameron	Mobility Planning & Public Engagement	Intersection data evaluation & public process facilitation
Liza Cohen	Mobility Planning & Public Engagement	Intersection evaluation methods & public process design

For survey services, Stantec will subcontract to Dawood Engineering, Inc., led by Jason Racette, PLS.

## Scope of Services

The first four tasks below are focused on the ground survey and construction documents for the mid-block sections of Chestnut Street. The remaining tasks outline the analysis, design development and public engagement process for the Mystic Street and Medford Street intersections.

### 1) Project Kick-Off

Stantec's core team and PIC will conduct a kick-off meeting with Town staff to review the scope of services, project schedule and key issues affecting the operation of all modes in the study area, working to understand both the data that has led to the proposed mid-block design as well as the factors influencing the upcoming intersections' design process. During the meeting, participants will agree on the final study area, extent of survey, the review process for the proposed mid-block design, locations for new data collection for the intersection designs, and tentative dates for new public outreach and a potential MassDOT coordination meeting for Massachusetts Avenue.

### 2) Site Survey

Stantec will hire Dawood Engineering, Inc. to conduct a survey of existing conditions and work closely with the Stantec Project Manager to provide our team with detailed topography base conditions in AutoCAD. This includes the following tasks:

- Research at Middlesex South Registry of Deeds and at the Town of Arlington offices to obtain record information concerning property lines.

Reference: Design & Planning Services for Chestnut Street Improvements

- Research at the various utility companies and Town departments to obtain record information concerning utility line locations.
- Field surveys to locate planimetric and topographic details such as sidewalks, wheelchair ramps, driveways, curbs, utility structures, light poles, utility poles, traffic signal equipment, signs, street furniture, building corners, doorways and thresholds, stairs, stair wells, fences, street trees, walls, and other visible features within the right of way to a point approximately 15 feet beyond the right of way.
- Spot elevations will be identified at 50' foot intervals throughout the project limits.
- Inverts of drain and sewer will be obtained by direct measurement.
- A Topographic Survey plan in AutoCAD Civil 3D format will depict the features located during the field survey. A digital terrain model will be developed, and 1-foot contours generated.
- An Existing Conditions Survey drawing plan at a scale of 1"=20' in AutoCAD Civil 3D 2021 in accordance MassDOT's current CAD Standards shall depict the information obtained during the field surveys.

Dawood's scope and fee priced out three options: 1) survey for the "middle" part of Chestnut Street between Mystic Street and Warren Street; 2) survey for the intersections of Chestnut Street/Medford Street and Chestnut Street/Mystic Street; 3) survey for both options 1 and 2. If the Town chose to do a phased approach, the first two options would correspond with having the survey performed in two phases. Stantec's recommendation to be most efficient with data collection reducing the design schedule, experience a cost savings by doing all the survey up front, and have full coverage of the project area is to pursue Option 3.

### 3) Utility Coordination Meeting

Concurrent with the site survey, Stantec's Project Manager will organize a utility coordination meeting to establish any needed upgrades, repairs, connections, or other near-term construction work that would impact the project during or within five years of its completion. Any needed work will be scheduled or integrated into the project as necessary, as determined by the Town.

### 4) Mid-Block Design Development

Well-developed conceptual plans for Chestnut Street between Mystic and Medford Streets will form the basis to decide what features are carried forward or modified in further detail in final design. Stantec will first develop a detailed conceptual design from the Town's base files that were prepared for the TAC. In addition to Town staff input, our team will be sure to incorporate the wealth of valuable design and construction standards outlined in previous studies and best practice guides like NACTO's Urban Streets Design Guide. The design will consider cost effective, durable and maintainable features and identify the full extent of curb extensions, crossing islands, crosswalks, bicycle facilities, on-street parking, stormwater treatment, and any needed utility modifications.

To understand costs and make budget decisions, experience has proven a detailed itemized opinion of probable cost at conceptual plans is needed. This allows us to summarize cost by key elements and so as clients can determine what features to move forward and discuss what features could be done under the future intersection design phase. This way the design can accommodate those future elements. For instance, we often include underground conduit in our construction plans. This allows for communication or electrical

Reference: Design & Planning Services for Chestnut Street Improvements

service to future elements such as coordinated signals at Mystic and Warren, adaptive traffic control and on-street parking management equipment. The result of the conceptual plan phase will be a well-documented base for final plan development.

Stantec will proceed to develop Final Design plans to form the basis of coordinating property owner and utility impacts and solidifying the project details and costs. Final Design plans need to avoid, to the extent practicable, impacts to utilities and ROW. Team members understand it is imperative to know the utility needs and ROW needs at this phase. Experience has proven the best way to save costs and time is to know what exists today and consider designs that avoid utility or ROW impacts if possible. As part of Final Design, Stantec will develop curb alignment and curb grade sheets to include in the Final Design plan set. This will assure ADA compliance and assist the contractor and resident during construction. A transportation management plan (TMP) will be developed. This will include temporary traffic control plans, sign and pavement marking plans, traffic sign summary plans and traffic details plans.

Final plans, itemized quantities, and an opinion of probable cost form the basis of a contractors bid and need to be complete, accurate and closely reviewed.

Two rounds of deliverables are planned:

- Final conceptual plans (title sheet, typical sections, cross sections, stormwater concept, streetscape concepts, conceptual traffic signs and pavement markings, construction/traffic phasing), utility conflicts, and list of anticipated permits.
- Final Design plans (title sheet, typical sections, profiles, cross sections, construction plans, drainage/stormwater layout and details, streetscape layout and details, curb alignment/grading sheets, traffic signs and pavement markings), itemized quantities and an opinion of probable cost.

## 5) Intersection Area GIS Base Maps

For the intersection design process, Arlington will transmit all available drawings and GIS layers for the study area, and Stantec will develop base mobility, land use and activity mapping. As an early effort, we will use this base to development at least 3 initial “sketch” concepts for each intersection, to be shared and reviewed with Town staff in advance of beginning the public outreach process to help our team understand staff preferences, concerns and operational constraints with different approaches to intersection design.

## 6) Intersection Mobility Data Collection & Evaluation

Stantec will conduct a field assessment of conditions in the study area to supplement the site survey and GIS maps, including roadway geometrics, traffic control, land use characteristics, itemization of sidewalk width, material and condition, roadway condition, markings type, layout and condition, and light pole, sign and signal locations. This information will inform the conceptual design process and public outreach and will be supplemented by detailed survey information obtained in Task 2 when available.

Stantec will conduct peak hour (7am to 9am and 4pm to 6pm) intersection turning movement counts (TMC) and record time-lapse photography at each intersection on a typical weekday. The TMCs will include all vehicular (cars/trucks/buses) and bicycle movements. The volume of crossing pedestrians will also be collected with separate tabulation of pedestrians crossing illegally (crossing on red signal/DON'T WALK) at

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Mystic. Stantec also will conduct 48-hour automatic traffic recorder (ATR) counts with vehicle speeds and vehicle classifications on all approaches to each intersection. Stantec will process the raw traffic volume count data and calculate numerical factors at each counted intersection (peak hour factor, truck percentage), to be used in a traffic capacity analysis. Additionally, Stantec will evaluate the traffic count data at each intersection and establish morning and afternoon peak hour traffic volumes for each.

Stantec will conduct intersection capacity analysis at the three intersections under existing (2021) morning and afternoon weekday peak hour traffic volumes and determine and tabulate Level of Service, volume-to-capacity ratios, vehicle delays and queueing using Synchro traffic analysis software for existing conditions and up to three alternatives as determined through Task 3.

For those walking, Stantec will conduct pedestrian Level of Service calculations for each signalized and non-signalized approach. Using the time-lapse, we also will evaluate pedestrian-vehicle interactions at each intersection and provide a summary of existing conditions, including determination of pedestrian desire lines at each intersection (during peak hours), reporting of the volume of crossing pedestrians for each crosswalk (including distinction between pedestrians crossing legally versus illegally) during peak hours.

For those bicycling, Stantec will prepare a Bicycle Compatibility Index rating for every intersection approach and identify critical vehicle turning movements that conflict with bicycle desire lines, as identified through field observations and the time-lapse recording.

## 7) User Data Collection and Evaluation

Using our in-house subscription to Replica, Stantec will prepare summaries of travel flows along each street approaching the study area intersections and prepare graphics for public meetings that help identify use patterns by time-of-day and day-of-week.

Stantec also will prepare graphical summaries of local social media communications across multiple platforms to identify potential concerns and complaints about the operation of each intersection. Our tool will search for mobility-related terms made over the past years on platforms such as Twitter that can add public input to the evaluation process.

## 8) Outreach Preparation

Stantec will compile a suite of existing conditions information from earlier task materials as they become available. Our goal will be to clearly define movement by all modes in the study area, their desire lines and access points, and places of conflict, concern, delay and inefficiency. Maps, figures and charts will convey information in slide show format for public meetings, as well as appropriate online (or table-top if possible) boards and maps.

The Town will determine dates, locations and online participation means (as desired by the Town) for all meetings and advertise each in advance. The Town will be responsible for securing the meeting location(s) and amenities, such as chairs, tables, easels, projection screens, sound amplification, sign-in sheets, refreshments, etc. as needed.

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## 9) Public Needs Workshop

The first outreach workshop will review existing conditions and ask participants to identify needs and issues with the study area. Input will be recorded on maps, marked-up boards, and via online shared note-taking via a platform such as Mural, with in-person options if possible. Stantec's facilitators will review Town goals for the downtown and then seek input from all participants and work attendees through trade-off discussions about elements of concern and value in the study area, including intersection operations, parking, crosswalks, benches and streetscape amenities, bicycle facilities, traffic conditions, etc. and how they relate to town-wide goals. Attendees will be encouraged to mark-up their own ideas for improvements in the study area.

## 10) Refinement of Concepts

Stantec will refine the initial three (3) concepts developed with the Town based on attendee input from workshop #1 and summarize each on boards and slides in advance of workshop #2, including summaries of pros, cons, concerns, and likely results by mode of travel.

## 11) Public Design Workshop

A second workshop will reveal the three concepts and welcome participants to comment, edit and propose alternatives. Stantec will summarize the strengths and weaknesses of each alternative against the issues identified in workshop #1 and town-wide goals, evaluate proposals shared by attendees, and encourage attendees to select elements from each that they would want in a final alternative through a voting/prioritization process using sticky dots or similar method.

## 12) Refinement of Preferred Alternative

Based on workshop #2's prioritization activity, Stantec will coordinate with the Town and refine a final conceptual design to be used for design development. In parallel, an illustrated plan will be developed for the final public meeting.

## 13) Pre 25% Design Plans

Based on the conceptual design and Preferred Alternative developed in Task 12, Stantec will develop Pre-25% Design Plans for the Preferred Alternative of the Chestnut/Mystic Streets and Chestnut/Medford Streets intersections. These will include dimensioned curb layout, draft pavement markings and lane assignments, signal post and mast arm locations, signage, pedestrian curb ramps and any preliminary grading, utility and materials information as are available and acceptable to the Town. The Pre-25% Design Plans and opinion of probable cost of the preferred alternative will be prepared for the Town to utilize in developing a strategy for construction funding, whether it be applying to MassWorks, Complete Streets or another funding source.

## 14) Opinion of Probable Cost

Stantec will develop an opinion of probable cost for the project for inclusion in any State grant application process. It is expected that this estimate will be refined during a design development process in the future.

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## Anticipated Schedule

Our team understands the urgency of this project and the momentum of Select Board approval. We are ready to begin survey and design development right away, as well as the process to arrive at designs for the two intersections. Our suggested schedule is below, but we are happy to refine in coordination with Town staff.

Task	Description	Timeframe
1	Project Kick-Off Meeting	February
2	Site Survey	February
3	Utility Coordination Meeting	February
4	Mid-Block Design Development	March – April
5	Intersection Area GIS Base Maps	February
6	Intersection Mobility Data Collection & Evaluation	March-April
7	User Data Collection and Evaluation	March-April
8	Outreach Preparation	March
9	Public Needs Workshop	April
10	Refinement of Concept	May
11	Public Design Workshop	June
12	Refinement of Preferred Alternative	July
13	Pre 25% Design Plans	July-August
14	Engineers Cost Estimate	September

## Additional Services

Additional services, should such services be requested, shall be provided on an hourly basis in accordance with the billing rates included in accompanying price proposal.

## Acceptance

Stantec Consulting Services Inc. sincerely appreciates the opportunity to provide these services on behalf of the Town of Arlington. Please feel free to contact us if you require any modifications or revisions to the Scope of Services as submitted. Stantec looks forward to assisting the Town of Arlington with this vitally important project.

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Should our scope of services and proposed fee be acceptable, please return a signed copy of the attached Profession Services Agreement with a notice to proceed with the project. This proposal shall remain valid for a period of ninety (90) days from the date noted above.

Regards,

**Stantec Consulting Services Inc.**



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Planning Lead  
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Attachments:

1. Fee Proposal



Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging. That's why at Stantec, we always **design with community in mind.**

We care about the communities we serve—because they're our communities too. This allows us to assess what's needed and connect our expertise; to appreciate nuances and envision what's never been considered; and to bring together diverse perspectives so we can collaborate toward a shared success.

We're planners, designers, engineers, architects, scientists, surveyors and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

Design with community in mind